

BACTERIAL BLIGHT OF GERANIUMS

J. W. Miller and R. J. Virgona

Geraniums (*Pelargonium hortorum* Bailey and *P. zonale* Ait.) and ivy geraniums (*P. peltatum* Ait.) are grown as finished, flowering pot plants in Florida. Also, seedling geraniums are being grown for finishing in other states in rapidly increasing numbers.

Bacterial blight is caused by *Xanthomonas pelargonii* (Brown) Starr and Burkh. Losses from this disease range from 10-25% in commercial greenhouses and from 10-100% in the field (4). Hosts are confined to the family Geraniaceae and include the following species: *Pelargonium hortorum* Bailey (fish geranium), *P. zonale* Ait. (zonal or horseshoe geranium), *P. domesticum* Bailey (show or fancy geranium), *P. peltatum* Ait. (ivy geranium), *Geranium onaculatum* L. (cranesbill), *G. pratense* L., *G. sylvaticum* L., and *G. yedoense* Franch et. Sav. (2).

This disease is found in North America, South America, and Europe. Although it has been present in the United States since 1890, it was 1923 before the correct causal organism of geranium leaf spot was isolated and characterized, and it was 1952, when definitive studies showed that the leaf spot and stem rot stages of this disease were due to the same organism (3).



Fig. 1. *Xanthomonas pelargonii* on *Pelargonium hortorum*: A) round leaf spots; B) infection moving from leaves into petiole causing a dull black decay.

SYMPTOMS. Two distinct symptoms are produced on geranium leaves infected with *X. pelargonii*: distinct, round leaf spots or large, angular necrotic areas. Round leaf spots start as small (2-5 mm), pale yellow, water-soaked areas on the underside of the leaf. Within 2-3 days, the spots become well defined, slightly sunken, and turn dark brown to black (fig. 1A). The spots rarely coalesce. The spotting is followed by a general leaf yellowing, necrosis, and wilt. These necrotic leaves may either droop and hang onto the plant or they may abscise. Bacteria may move systemically from the petioles of infected leaves into the stems through the vascular elements and cause a dark brown to black stem decay (fig. 1B) (1). The stem decay caused by *X. pelargonii* is typically a duller black and has a drier appearance than that caused by Pythium sp. (1).

Angular leaf necrosis begins as a wilt at the margin of the leaf blade and progresses to a vein-delimited necrosis. Eventually the entire leaf may turn flaccid and either abscise or hang on the plant. Again, the bacteria may enter the stem and cause decay (1).

DISEASE DEVELOPMENT. *X. pelargonii* is not known to be seed transmitted. This organism overseasons in infected stock plants and persists in contaminated soil for up to 3 months. Infected stock plants may be symptomless, especially under the dry, cool conditions (60-70 F = 15.5-21 C) of the winter propagation season. Cutting knives drawn through these infected, yet symptomless plants, become infested with the pathogen. Adjacent healthy stock plants and the cuttings derived from them may be inoculated by the infested knives.

In the warm and humid cutting bed, some cuttings may rot, while others may express leaf symptoms. Splashing water disseminates bacteria from the lesions of infected plants to adjacent healthy ones, where the plants are crowded (1,4).

CONTROL. No resistant varieties of *P. hortorum* are known, and no remedies are available if infected stock is used for propagation. Control is achieved by excluding the pathogen through the use of disease-free cuttings or by growing seedling geraniums in pasteurized or fumigated potting soil mix (1,4).

#### LITERATURE CITED:

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